

WHAT IS CLAIMED IS:

1. A method in a packet switched data transfer system for processing header bits and payload bits in a frame of bits, the method comprising:
 - 5 classifying the header bits into a first predetermined class of bits and into a second predetermined class of bits;
 - classifying the payload bits into the first predetermined class of bits and into the second predetermined class of bits;
 - 10 processing the first predetermined class of bits in accordance with a first predetermined mechanism; and
 - processing the second predetermined class of bits in accordance with a second predetermined mechanism.
2. The method of claim 1, further comprising:
 - 15 constructing a new frame of bits based upon the processed first predetermined class of bits and the processed second predetermined class of bits.
3. The method of claim 1, wherein:
 - 20 classifying the header bits into the first predetermined class of bits and into the second predetermined class of bits includes classifying each of the header bits based upon a location of the header bit in the frame of bits, and
 - 25 classifying the payload bits into the first predetermined class of bits and into the second predetermined class of bits includes classifying each of the payload bits based upon a location of the payload bit in the frame of bits.

4. The method of claim 1, wherein:
 - 5 classifying the header bits into the first predetermined class of bits and into the second predetermined class of bits includes classifying each of the header bits based upon a pre-assigned header weight of the header bit, and classifying the payload bits into the first predetermined class of bits and into the second predetermined class of bits includes classifying each of the payload bits based upon a pre-assigned payload weight of the payload bit.
5. The method of claim 1, wherein:
 - 10 processing the first predetermined class of bits in accordance with the first predetermined mechanism includes grouping the first predetermined class of bits; and processing the second predetermined class of bits in accordance with the second predetermined mechanism includes grouping the second predetermined class of bits.
6. The method of claim 1, further comprising:
 - 15 grouping the processed first predetermined class of bits; grouping the processed second predetermined class of bits; and constructing a new frame of bits based upon the grouped-processed first predetermined class of bits and the grouped-processed second predetermined class of bits.
7. The method of claim 1, wherein:
 - 20 the first predetermined mechanism includes applying a first error protection algorithm, and the second predetermined mechanism includes applying a second error protection algorithm.

8. A method in a packet switched data transfer system for reducing an encoded frame size a frame having header bits and payload bits, the method comprising:

5 classifying the header bits into a first predetermined class of bits and into a second predetermined class of bits;

classifying the payload bits into the first predetermined class of bits and into the second predetermined class of bits;

encoding the first predetermined class of bits in accordance with a first encoding process; and

10 encoding the second predetermined class of bits in accordance with a second encoding process,

wherein the first encoding process is different from the second encoding process.

15 9. The method of claim 8, further comprising:

constructing a new frame based upon the encoded first predetermined class of bits and the encoded second predetermined class of bits.

10. The method of claim 8, further comprising:

20 grouping the encoded first predetermined class of bits;

grouping the encoded second predetermined class of bits; and

constructing a new frame based upon the grouped encoded first predetermined class of bits and the grouped encoded second predetermined class of bits.

25

11. The method of claim 8, wherein the first predetermined encoding process has a first coding rate greater than a second coding rate of the second predetermined encoding process.

12. A method in a packet switched data transfer system for reformatting a frame having header bits and payload bits, the method comprising:
5 classifying the header bits into a first predetermined class of bits and into a second predetermined class of bits;
10 classifying the payload bits into the first predetermined class of bits and into the second predetermined class of bits;
15 grouping the header bits of the first predetermined class of bits with the payload bits of the first predetermined class of bits;
20 grouping the header bits of the second predetermined class of bits with the payload bits of the second predetermined class of bits; and
25 constructing a reformatted frame using the grouped first predetermined class of bits and the grouped second predetermined class of bits.

13. The method of claim 12, further comprising:
15 before constructing a reformatted frame,
20 encoding the grouped first predetermined class of bits with a first predetermined algorithm; and
25 encoding the grouped second predetermined class of bits with a second predetermined algorithm,
30 wherein constructing a reformatted frame includes constructing a reformatted frame using the encoded grouped first predetermined class of bits and the encoded grouped second predetermined class of bits.

14. The method of claim 13, wherein the first predetermined algorithm has
25 a first coding rate greater than a second coding rate of the second predetermined algorithm.

15. A packet switched data transfer device comprising:
a frame receiver configured to receive a frame of bits, the frame of bits comprising a plurality of header bits and a plurality of payload bits;
a bit classifier coupled to the frame receiver, the bit classifier configured to classify the plurality of header bits and the plurality of payload bits into a first class of bits and into a second class of bits; and
a bit processor coupled to the bit classifier, the bit processor configured to process the first class of bits according to a first predetermined process and to process the second class of bits according to a second predetermined process.

5

10

16. The packet switched data transfer device of claim 15, wherein:
the bit classifier is further configured to classify each header bit of the plurality of header bits based upon a location of the header bit in the frame of bits and to classify payload bits of the plurality of payload bits based upon a location of the payload bit in the frame of bits.

15

17. The packet switched data transfer device of claim 15, wherein:
the bit classifier is further configured to classify each header bit of the plurality of header bits based upon a pre-assigned header weight of the header bit and to classify each payload bit of the plurality of payload bits based upon a pre-assigned payload weight of the payload bit.

20

18. The packet switched data transfer device of claim 15, wherein:
the first predetermined process has a first coding rate, and
the second predetermined process has a second coding rate, the second coding rate less than the first coding rate.

25

19. The packet switched data transfer device of claim 15, further comprising:

5 a frame constructor coupled to the bit processor, the frame constructor configured to construct a new frame of bits based upon the processed first class of bits and the processed second class of bits.